REMARKS

Claims 1-12 and 14-17 are pending in the present Application. No changes have been made to the claims in this amendment. The claims are merely presented here for the convenience of the Examiner.

Reconsideration and allowance of the claims are respectfully requested in view of the following remarks.

Allowable Subject Matter

Applicants wish to thank the Examiner for the indication of allowable subject matter in Claims 15, 17, and 18.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-12, 14, 16 and 19-21 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Patent No. 6,306,978 to Braat, et al. (Braat) in view of United States Publication No. 2003/0130403A1 to Geprags, et al. (Geprags). Applicants respectfully traverse this rejection.

Claims 1-12, 14, 16 and 19-21 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Patent No. 6,306,978 to Braat, et al. (Braat) in view of United States Patent No. 6,872,777 to Adedeji, et al. (Adedeji). Applicants respectfully traverse this rejection.

Braat discloses a capped poly(phenylene ether) resin and a method of capping a poly(phenylene ether) resin using a capping agent (Abstract). The capping agent is an ester of salicylic acid or anthranilic acid (Col. 4, lines 1-7). The resin composition may further comprise a polystyrene. (Col. 6, lines 19-20). Braat teaches that uncapped polyphenylene ether becomes dark and embrittled in the presence of oxygen and high temperatures due to the oxidation of hydroxyl groups and that capping the poly(phenylene ether) provides a solution to that problem. (Col. 1, lines 41-46)

Geprags is directed to a composition comprising a syndiotactic vinylaromatic polymer, inorganic filler, an elastomeric, particulate graft polymer, a compatibilizer, an optional elastomeric particulate styrene-diene block copolymer, and an optional thermoplastic elastomer. (Abstract) As explained in paragraphs [0055] to [0056] the compatibilizer may be a poly(arylene ether) and is present in an amount of 1 to 10 percent by weight.

Adedeji has been cited for its teachings with regard to anti-oxidants, glass fiber, flame retardant and polystyrene. Applicants respectfully note that Adedeji does not teach or suggest use of a capped poly(arylene ether).

The Examiner has asserted that it is obvious to combine the additives of Geprags with the capped polyphenylene ether of Braat. In making this rejection the Examiner has not given proper weight to the unexpected results shown by the claimed compositions. An applicant can rebut a prima facie case of obviousness by presenting comparative test data showing that the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have. *In re Dillon*, 919 F.2d 688, 692-93, 16 U.S.P.Q.2d 1987, 1901 (Fed. Cir. 1990). While Braat implies that capped poly(phenylene ether) alone has better high temperature stability Braat is silent as to the high temperature stability of compositions comprising a capped poly(phenylene ether) and other thermoplastic resins or additives.

The results shown in Table 2 show the unexpected results of using a capped poly(arylene ether) in a composition comprising a component selected from the group consisting of impact modifier, reinforcing filler, flame retardant and combinations of two or more of the foregoing. Table 2 is reproduced here for the Examiner’s convenience.

Table 2

	1*	2	3	4*	5	6	7*	8*	9*	10	11*	12	13	14*	15*	16
PPO I	100	100	100	-	-	-	50	50	50	50	80	80	80	67	67	67
PPO II	-	-	-	100	100	100	-	-	-	-	-	-	-	-	-	-
HIPS	-	-	-	-	-	-	50	50	-	-	-	-	-	23	-	-
XPS	-	-	-	-	-	-	-	-	42.5	42.5	-	-	-	-	19.5	19.5
SEBS	-	-	-	-	-	-	-	-	7.5	7.5	-	-	-	-	3.5	3.5
Polysalicylate	-	4	6	-	4	6	-	2.5	-	2.5	-	2	4	-	-	3
Irganox 1010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LLDPE	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1
Glass	-	-	-	-	-	-	-	-	-	-	20	20	20	-	-	-
RDP	-	-	-	-	-	-	-	-	-	-	-	-	-	9	9	9
Tensile strength at break	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unaged	84	84	82	79	80	81	52	50	55	56	120	115	110	64	70	77
120°C	82	92	89	40	72	75	44	38	53	60	102	102	106	68	73	82
140°C	72	84	86	35	63	70	35	29	48	56	89	95	105	62	71	79
175°C	65	86	84	-	-	-	-	-	-	-	60	73	92	53	65	75
190°C	32	70	81	-	-	-	-	-	-	-	-	-	-	-	-	-

*Comparative examples

Table 2 above shows the unexpected results of using a capped poly(arylene ether) in a composition comprising a component selected from the group consisting of impact modifier, reinforcing filler, flame retardant and combinations of two or more of the foregoing. Specifically, examples 10, 12, 13 and 16 show a surprisingly high retention of tensile strength when a capped poly(arylene ether) is used in a composition with one or more of these components.

Examples 1-3 and 4-6 can be considered comparative examples for the instantly claimed composition in that they do not contain an impact modifier, a reinforcing filler, or a flame retardant. These examples show the benefits of capping a poly(arylene ether). In particular, examples 2 and 3 when compared to example 1 and examples 5 and 6 when compared to example 4 show that capping a poly(arylene ether) results in greater retention of tensile strength after heat aging.

Examples 7 and 8 contain both a poly(arylene ether) and a rubber-modified poly(alkenyl aromatic) resin. A rubber modified poly(alkenyl aromatic) resin is not an impact modifier. The term “impact modifier” as used in the application refers to block copolymers as described in paragraphs [0016] to [0019]. Example 8 comprises a capped poly(arylene ether) whereas the poly(arylene ether) is uncapped in example 7. The results show that tensile strength not retained after heat aging when a capped poly(arylene ether) is combined with a rubber modified polystyrene impact modifier. Examples 7 and 8 demonstrate the unpredictability of the effect of using a capped poly(arylene ether) in a thermoplastic composition.

Examples 9 and 10 both contain an impact modifier in addition to the poly(arylene ether). Example 10 comprises a capped poly(arylene ether) whereas example 9 comprises an uncapped poly(arylene ether). The results show that inventive example 10, when compared to comparative example 9, shows a unexpected retention of tensile strength after heat aging. These results are in marked contrast to examples of 7 and 8. Given the results of examples 7 and 8 one of ordinary skill in the art would have reasonably predicted that the example 10 would not have retained tensile strength.

Examples 12 and 13 show a surprising retention of tensile strength when compared to example 11. All three examples contain a poly(arylene ether) and a reinforcing filler comprising glass. Additionally, examples 12 and 13 contain capped poly(arylene ether) whereas example 11 contains an uncapped poly(arylene ether). As shown in the table below the results show that the retained tensile strength after heat aging, specifically of the capped example 13, is quite significant when compared to uncapped example 11. As shown in the data, the introduction of glass reinforcing filler results in a marked decrease in tensile strength retention. By using a capped poly(arylene ether) tensile strength retention can be improved to levels comparable to or better than compositions without reinforcing filler.

Tensile strength retention	Example 1	Example 11	Example 12	Example 13
120°C	97.6%	85.0%	88.7%	96.3%
140°C	85.7%	74.1%	82.6%	95.4%
175°C	77.4%	50.0%	63.4%	83.6%
190°C	38.1%	-	-	-

Examples 15 and 16 comprise LLDPE, a flame retardant (RDP) and an impact modifier. Example 16 comprises a capped poly(arylene ether) whereas example 15 comprises an uncapped poly(arylene ether). Surprisingly, example 16 shows little to no loss of tensile strength after heat aging. More surprisingly, example 16, under some conditions, appears to gain tensile strength. Specifically, example 16 shows an apparent increase in tensile strength after heat aging for 500 hours at 120°C as compared to an unaged sample. This is in contrast to example 15.

Additionally, Applicants respectfully disagree with Examiner's position that examples 10 and 16 are broader than the actual invention. Claim 1 recites a poly(arylene ether) composition comprising a poly(arylene ether) having aromatic ester end groups and a component selected from the group consisting of impact modifier, reinforcing filler, flame retardant and combinations of two or more of the foregoing wherein the poly(arylene ether) having aromatic ester end groups is present in an amount greater than 15 weight percent based on the total weight of the composition, and wherein the poly(arylene ether) composition is a thermoplastic composition. The presence of an additional component, such as HIPS or XPS is permitted by the transitional word "comprising" and the use of a combination of a reinforcing filler and a flame retardant is within the boundaries of the Markush group.

In light of the foregoing remarks, Applicants respectfully request reconsideration and removal of the objections and rejections.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the objection(s) and rejection(s) and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 50-1131.

Respectfully submitted,

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